ADVANCES IN PHYSIOLOGY EDUCATION

ARTICLES

INNOVATIONS AND IDEAS

EDUCATIONAL PUZZLES FOR UNDERSTANDING GASTROINTESTINAL PHYSIOLOGY S1

C. M. Baily, C. T. Hsu, and S. E. DiCarlo

The authors describe four enjoyable educational tools that promote students' active learning, enhance their problem-solving skills, and encourage discussion.

A LABORATORY DEMONSTRATION FOR LEARNING ABOUT MAST CELL DEGRANULATION S19

J. Corado and A. Eblen-Zajjur

This demonstration is easy to set up, inexpensive, and allows direct observation of cell degranulation.

"VIRTUAL RAT": A TOOL FOR UNDERSTANDING HORMONAL REGULATION OF GASTROINTESTINAL FUNCTION S23

C. T. Hsu, C. M. Baily, and S. E. DiCarlo

This "dry" laboratory experiment helps students to learn about experimental design and data analysis.

USE OF COURSE-EMBEDDED PROJECTS FOR PROGRAM ASSESSMENT S39

B. L. Krilowicz and T. Downs

In this group project, students critically analyze neurophysiology papers from the primary literature and report the results as oral presentations and posters. Assessments are made of student's abilities to analyze, synthesize, and evaluate information.

TELEMEDICAL EDUCATION: TEACHING SPIROMETRY ON THE INTERNET S55

E. H. Lum and T. J. Gross

This educational module is designed to help nonpulmonologists to learn about an aspect of medical respiratory physiology.

HELPING STUDENTS TO UNDERSTAND THAT OUTWARD CURRENTS DEPOLARIZE CELLS S62

M. Stewart

The author proposes two simple but highly effective additions to the way we teach students about membrane electrophysiology.

THE BEAVER POND ANALOGY OF BLOOD GLUCOSE CONTROL S69

D. P. Swain

Just as beavers maintain constant pond water levels for proper functioning of their lodges, so do homeostatic mechanisms regulate blood glucose levels. The analogy is extended to include the effects of exercise in normal and diabetic individuals.

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CASE-STIMULATED LEARNING WITHIN ENDOCRINE PHYSIOLOGY LECTURES: AN APPROACH APPLICABLE TO OTHER DISCIPLINES S74

M. R. Walters

This approach to active learning provides a clinical context for physiological concepts.

UNILATERAL NEPHRECTOMY IN THE RAT AS A TEACHING MODEL OF RENAL FUNCTION S79

C. F. Zwemer

Students in an upper-level physiology course formulate and test hypotheses about compensatory mechanisms that follow removal of a kidney. They learn about experimental design and the humane use of animals in teaching and research.

EDUCATIONAL EXPERIMENTS

PEER TUTORING IMPROVES STUDENT PERFORMANCE IN AN ADVANCED PHYSIOLOGY COURSE S86

D. A. Lake

The author reviews the literature and contributes his positive findings on peer tutoring in biomedical science education.

HOW ACCURATE ARE OUR ASSESSMENTS ABOUT OUR STUDENTS' BACKGROUND KNOWLEDGE? S93

A. A. Rovick, J. A. Michael, H. I. Modell, D. S. Bruce, B. Horowitz, T. Adamson, D. R. Richardson, D. U. Silverthorn, and S. A. Whitescarver

The results of this study indicate that instructors are poor judges of what students already know when they begin studying respiratory physiology. The validity of designing courses predicated on students actually having expected prerequisite knowledge is open to question.

COLUMNS

PHYSIOLOGISTS' FORUM S102

Readers respond to the previous issue's special section on the future of physiology education: making a case for the art of teaching, and reporting on the state of affairs in Russia.